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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	09/914,171	HUI ET AL.
	Examiner	Art Unit	
	Andy S. Rao	2621	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 November 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-2, 9-10, 15-16, 18--21, 23-36</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-2, 9-10, 15-16, 18--21, 23-36</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments Contained In Pre-Appeal Brief Request for Review

1.   Applicant's arguments, see the Pre-Appeal Brief Request For Review, filed

11/21/07, with respect to the rejection(s) of claim(s) 1-2, 9-10, 26-27, and 29-30 under 35

U.S.C. 103(a) as being unpatentable over Martin et al., (hereinafter referred to as

"Martin") in view of Hewlett et al, (hereinafter referred to as "Hewlett"), and of claims

15-16, 18-21, 23-25, 28, 31-36 under 35 U.S.C. 103(a) as being unpatentable over Martin

et al., (hereinafter referred to as "Martin") in view of Hewlett et al., (hereinafter referred

to as "Hewlett"), and further in view of Roeder et al., (hereinafter referred to as

"Roeder"),

have been fully considered and are persuasive. Therefore, the rejections have been

withdrawn. However, upon further consideration, a new ground(s) of rejection is made in

view of Hewlett et al., (US Patent 5,508,750: hereinafter referred to as "Hewlett").

        A detailed rejection follows.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-2, 9-10, 26-27, and 29-30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Martin et al., (hereinafter referred to as "Martin") in view of Hewlett et

al, (hereinafter referred to as "Hewlett")

Martin a method of processing video data to detect field characteristics of the data

(Martin: figures 2-3), said data having a plurality of fields, comprising: calculating a first

difference value as a difference between pixels of a first field and pixels of a second field

(Martin: column 2, lines 24-36); calculating a second difference value between the pixels

of said first field and the pixels of a third field (Martin: column 2, lines 11-23);

calculating a ratio (Martin: column 3, lines 33-35); comparing said ratio with a threshold

(Martin: column 3, lines 36-40); determining whether said first field is an interlaced field

or a progressive field (i.e. non-interlaced) with respect to third field based on said steps of

calculating (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claims 1-2.

However, Martin fails to disclose that the first difference value is generated from a first

field that is successive to said second field, that the second difference value is generated

from a third field that is successive to said first field, and that the ratio is calculated

between said first and second difference values, as in the claims. Hewlett discloses a

method (Hewlett: column 6, lines 30-45) generating a first difference value from a first

field that is successive to said second field (Hewlett: column 3, lines 49-56: fields T1 and

B1), generating a second difference value from a third field that is successive to said first

field (Hewlett: column 3, lines 49-56: fields B1 and T2), and that the ratio is calculated

between said first and second difference values (Hewlett: column 3, lines 60-67) in order

to get a more accurate measurement of characteristics in a video sequence (Hewlett:

column 4, lines 8-20) for determining whether a two fields of a video sequence are

interlaced or progressive (Hewlett: column 3, lines 40-48; column 5, lines 40-50).

Accordingly, given this teaching it would have been obvious for one of ordinary skill in

the art to incorporate the Hewlett teaching into the Martin method by having Martin

generate first and second difference values as shown by Hewlett into the Martin method, and use the generated ratio be used by the determining step of Martin since that generated ratio would provide a more accurate measurement of characteristics in a video sequence. The Martin method, now incorporating the first and second difference values as shown by Hewlett, has all of the features of claims 1-2.

Martin discloses an apparatus of processing video data to detect field characteristics of the data, said data having a plurality of fields (Martin: figure 1), comprising: a difference value calculating means for calculating a first difference value as a difference between pixels of a first field and pixels of a second field (Martin: column 2, lines 24-36), and calculating a second difference value between the pixels of said first field and the pixels of a third field (Martin: column 2, lines 11-23); dividing means for calculating a ratio (Martin: column 3, lines 33-35) and a comparator means for comparing said ratio with a threshold (Martin: column 3, lines 36-40) and determining whether said first field is an interlaced field or a progressive field (i.e. non-interlaced) with respect to said comparison (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claims 9-10. However, Martin fails to disclose that the first difference value is generated from a first field that is successive to said second field, that the second difference value is generated from a third field that is successive to said first field, and that the ratio is calculated between said first and second difference values, as in the claims. Hewlett discloses an apparatus (Hewlett: figure 5) generating a first difference value from a first field that is successive to said second field (Hewlett: column 3, lines 49-56: fields T1 and BI), generating a second difference value from a third field that is successive to said first field (Hewlett: column 3, lines 49-56: fields B1 and T2), and that the ratio is calculated

between said first and second difference values (Hewlett: column 3, lines 60-67) in order

to get a more accurate measurement of characteristics in a video sequence (Hewlett:

column 4, lines 8-20) for determining whether a two fields of a video sequence are

interlaced or progressive (Hewlett: column 3, lines 40-48; column 5, lines 40-50).

Accordingly, given this teaching it would have been obvious for one of ordinary skill in

the art to incorporate the Hewlett teaching into the Martin apparatus by having Martin

generate first and second difference values as shown by Hewlett into the Martin

apparatus, and use the generated ratio be used by the determining step of Martin since

that generated ratio would provide a more accurate measurement of characteristics in a

video sequence. The Martin apparatus, now incorporating the first and second difference

values as shown by Hewlett, has all of the features of claims 9-10.

Regarding claim 26, the Martin method, now incorporating the first and second

difference values as shown by Hewlett, teaches verifying whether a scene change has

occurred (Hewlett: column 4, lines 8-25), as in the claim.

Martin a method of processing video data to detect field characteristics of the data

(Martin: figures 2-3), said data having a plurality of fields, comprising: calculating a first

difference value as a difference between pixels of a first field and pixels of a second field

(Martin: column 2, lines 24-36); calculating a second difference value between the pixels

of said first field and the pixels of a third field (Martin: column 2, lines 11-23);

calculating a ratio (Martin: column 3, lines 33-35); comparing said ratio with a threshold

(Martin: column 3, lines 36-40); determining whether said first field is an interlaced field

or a progressive field (i.e. non-interlaced) with respect to third field based on said steps of

calculating (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claim 27.

However, Martin fails to disclose that the first difference value is generated from a first

field that is successive to said second field, that the second difference value is generated

from a third field that is successive to said first field, and that the ratio is calculated

between said first and second difference values, teaches verifying whether a scene change

has occurred, as in the claims. Hewlett discloses a method (Hewlett: column 6, lines 30-

45) generating a first difference value from a first field that is successive to said second

field (Hewlett: column 3, lines 49-56: fields T1 and BI), generating a second difference

value from a third field that is successive to said first field (Hewlett: column 3, lines 49-

56: fields B1 and T2), and that the ratio is calculated between said first and second

difference values (Hewlett: column 3, lines 60-67) in order to get a more accurate

measurement of characteristics in a video sequence (Hewlett: column 4, lines 8-20) for

determining whether a two fields of a video sequence are interlaced or progressive

(Hewlett: column 3, lines 40-48; column 5, lines 40-50). Accordingly, given this teaching

it would have been obvious for one of ordinary skill in the art to incorporate the Hewlett

teaching into the Martin method by having Martin generate first and second difference

values as shown by Hewlett into the Martin method, and use the generated ratio be used

by the determining step of Martin since that generated ratio would provide a more

accurate measurement of characteristics in a video sequence. Accordingly, given this

teaching it would have been obvious for one of ordinary skill in the art to incorporate the

Hewlett teaching into the Martin method by having Martin generate first and second

difference values as shown by Hewlett into the Martin method, and use the generated

ratio be used by the determining step of Martin since that generated ratio would provide a

more accurate measurement of characteristics in a video sequence. The Martin method,

now incorporating the first and second difference values as shown by Hewlett, has all of

the features of claim 27.

Regarding claims 29-30, the Martin method, now incorporating the first and

second difference values as shown by Hewlett, teaches of the groupings as described in

claims 29 and 30 (Martin: column 4, lines 5-66), as in the claims.

4.   Claims 15-16, 18-21, 23-25, 28, 31-36 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Martin et al., (hereinafter referred to as "Martin") in view of

Hewlett et al., (hereinafter referred to as "Hewlett"), and further in view of Roeder et al.,

(hereinafter referred to as "Roeder").

Martin discloses an apparatus of processing video data to detect field

characteristics of the data, said data having a plurality of fields (Martin: figure 1),

comprising: a difference value calculating means for calculating a first difference value

as a difference between pixels of a first field and pixels of a second field (Martin: column

2, lines 24-36), and calculating a second difference value between the pixels of said first

field and the pixels of a third field (Martin: column 2, lines 11-23); dividing means for

calculating a ratio (Martin: column 3, lines 33-35) and a comparator means for comparing

said ratio with a threshold (Martin: column 3, lines 36-40) and determining whether said

first field is an interlaced field or a progressive field (i.e. non-interlaced) with respect to

said comparison (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claim 15.

However, Martin fails to disclose that the first difference value is generated from a first

field that is successive to said second field, that the second difference value is generated

from a third field that is successive to said first field, that the ratio is calculated between

said first and second difference values, a first subtractor receiving a pixel of said first

field and a first pixel of said second field, a second subtractor that receives a first pixel of

first field and a second pixel of a second field and calculates the difference; and a

comparator selects the smaller of the pixel differences and accumulates them, as in claim

15. Hewlett discloses an apparatus (Hewlett: figure 5) generating a first difference value

from a first field that is successive to said second field (Hewlett: column 3, lines 49-56:

fields T1 and BI), generating a second difference value from a third field that is

successive to said first field (Hewlett: column 3, lines 49-56: fields B1 and T2), and that

the ratio is calculated between said first and second difference values (Hewlett: column 3,

lines 60-67) in order to get a more accurate measurement of characteristics in a video

sequence (Hewlett: column 4, lines 8-20) for determining whether a two fields of a video

sequence are interlaced or progressive (Hewlett: column 3, lines 40-48; column 5, lines

40-50). Accordingly, given this teaching it would have been obvious for one of ordinary

skill in the art to incorporate the Hewlett teaching into the Martin apparatus by having

Martin generate first and second difference values as shown by Hewlett into the Martin

apparatus, and use the generated ratio be used by the determining step of Martin since

that generated ratio would provide a more accurate measurement of characteristics in a

video sequence. The Martin apparatus, now incorporating the first and second difference

values as shown by Hewlett, has a majority of the features of claim 15. However, the

Martin-Hewlett apparatus does not specifically teach of a first subtractor receiving a pixel

of said first field and a first pixel of said second field, a second subtractor that receives a

first pixel of first field and a second pixel of a second field and calculates the difference;

and a comparator selects the smaller of the pixel differences and accumulates them.

However, Roeder does (Roeder: figures 1A-1D; column 4, lines 20- 68; column 5, lines

1-8; column 2, Lines 46-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to compare the first pixel of the first field with the rest of the pixels of a second field in order to more accurately find the pixels with the most motion, which would allow for more accurate compression and display. The Martin apparatus, now incorporating the first and second difference values as shown by Hewlett and the Roeder first and second subtractors and comparator, has all of the features of claim 15.

As for claim 16, the Martin apparatus, now incorporating the first and second difference values as shown by Hewlett and the Roeder first and second subtractors and comparator, addresses most of the limitations of the claim have been discussed in the above rejection of claim 15, but does not specifically teach of setting to zero pixel differences that are less than a threshold. However, it is considered obvious to one of ordinary skill in the art at the time of the invention that noise must be accounted for and therefore zeroing the difference where noise is detected so that false values are not used in the compression system, *Official Notice.* Also a general teaching can be found in the reference (Roeder: column 1, lines 52-58), as in the claim.

Martin discloses an apparatus of processing video data to detect field characteristics of the data, said data having a plurality of fields (Martin: figure 1), comprising: a difference value calculating means for calculating a first difference value as a difference between pixels of a first field and pixels of a second field (Martin: column 2, lines 24-36), and calculating a second difference value between the pixels of said first field and the pixels of a third field (Martin: column 2, lines 11-23); dividing means for calculating a ratio (Martin: column 3, lines 33-35) and a comparator means for comparing

said ratio with a threshold (Martin: column 3, lines 36-40) and determining whether said

first field is an interlaced field or a progressive field (i.e. non-interlaced) with respect to

said comparison (Martin: column 3, lines 50-67; column 4, lines 1-40), a first and second

memory (Martin: figure 1), as in claims 18-20. However, Martin fails to disclose that the

first difference value is generated from a first field that is successive to said second field,

that the second difference value is generated from a third field that is successive to said

first field, that the ratio is calculated between said first and second difference values, and

a moving pixel counter, as in claims 18-20. Hewlett discloses an apparatus (Hewlett:

figure 5) generating a first difference value from a first field that is successive to said

second field (Hewlett: column 3, lines 49-56: fields T1 and BI), generating a second

difference value from a third field that is successive to said first field (Hewlett: column 3,

lines 49-56: fields B1 and T2), and that the ratio is calculated between said first and

second difference values (Hewlett: column 3, lines 60-67) in order to get a more accurate

measurement of characteristics in a video sequence (Hewlett: column 4, lines 8-20) for

determining whether a two fields of a video sequence are interlaced or progressive

(Hewlett: column 3, lines 40-48; column 5, lines 40-50). Accordingly, given this teaching

it would have been obvious for one of ordinary skill in the art to incorporate the Hewlett

teaching into the Martin apparatus by having Martin generate first and second difference

values as shown by Hewlett into the Martin apparatus, and use the generated ratio be used

by the determining step of Martin since that generated ratio would provide a more

accurate measurement of characteristics in a video sequence. The Martin apparatus, now

incorporating the first and second difference values as shown by Hewlett, has a majority

of the features of claims 18-20. However, the Martin-Hewlett apparatus does not

specifically teach of does not specifically teach of a moving pixel counter. However,
Roeder does (Roeder: figure 4 as combined with figure 8 will be the equivalent of the
moving pixel counter; column 6, lines 53-68; column 7, lines 1-51). It would have been
obvious to one of ordinary skill in the art at the time of the invention to combine Roeder's
motion detector within Martin's interlaced field detector of the Martin-Hewlett apparatus
in order to have the most accurate results since Roeder's motion detector will detect all
motion occurrences. The Martin apparatus, now incorporating the first and second
difference values as shown by Hewlett and the Roeder motion detector, has all of the
features of claims 18-20.

Regarding claim 21, the Martin apparatus, now incorporating the first and second
difference values as shown by Hewlett and the Roeder motion detector, teaches of the
step of determining whether or not there has been a scene change between said first and
third fields, at least in part based on said output of said accumulator means (Martin:
column 4, lines 41-57), as in the claim.

Martin a method of processing video data to detect field characteristics of the data
(Martin: figures 2-3), said data having a plurality of fields, comprising: calculating a first
difference value as a difference between pixels of a first field and pixels of a second field
(Martin: column 2, lines 24-36); calculating a second difference value between the pixels
of said first field and the pixels of a third field (Martin: column 2, lines 11-23);
calculating a ratio (Martin: column 3, lines 33-35); comparing said ratio with a threshold
(Martin: column 3, lines 36-40); determining whether said first field is an interlaced field
or a progressive field (i.e. non-interlaced) with respect to third field based on said steps of
calculating (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claim 23.

However, Martin fails to disclose that the first difference value is generated from a first

field that is successive to said second field, that the second difference value is generated

from a third field that is successive to said first field, and that the ratio is calculated

between said first and second difference values, calculating pixel differences between the

pixel of the first field and two pixels of the second field, selecting a smaller difference

between said pixel differences, accumulating said smaller pixel difference, as in claim 23.

Hewlett discloses a method (Hewlett: column 6, lines 30-45) generating a first difference

value from a first field that is successive to said second field (Hewlett: column 3, lines

49-56: fields T1 and BI), generating a second difference value from a third field that is

successive to said first field (Hewlett: column 3, lines 49-56: fields B1 and T2), and that

the ratio is calculated between said first and second difference values (Hewlett: column 3,

lines 60-67) in order to get a more accurate measurement of characteristics in a video

sequence (Hewlett: column 4, lines 8-20) for determining whether a two fields of a video

sequence are interlaced or progressive (Hewlett: column 3, lines 40-48; column 5, lines

40-50). Accordingly, given this teaching it would have been obvious for one of ordinary

skill in the art to incorporate the Hewlett teaching into the Martin method by having

Martin generate first and second difference values as shown by Hewlett into the Martin

method, and use the generated ratio be used by the determining step of Martin since that

generated ratio would provide a more accurate measurement of characteristics in a video

sequence. However, the Martin-Hewlett method does not specifically teach of calculating

pixel differences between the pixel of the first field and two pixels of the second field,

selecting a smaller difference between said pixel differences, and accumulating said

smaller pixel difference. However, Roeder does (Roeder: figures 1A-1D; column 4, lines

20- 68; column 5, lines 1-8; column 2, Lines 46-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to compare the first pixel of the first field with the rest of the pixels of a second field in order to more accurately find the pixels with the most motion, which would allow for more accurate compression and display. The Martin method, now incorporating the first and second difference values as shown by Hewlett and the Roeder calculating, selecting, and accumulating steps, has all of the features of claim 23.

As for claim 24, the Martin method, now incorporating the first and second difference values as shown by Hewlett and the Roeder calculating, selecting, and accumulating steps, has addresses most of the limitations of the claim have been discussed in the above rejection of claim 23, but does not specifically teach of setting to zero pixel differences that are less than a threshold. However, it is considered obvious to one of ordinary skill in the art at the time of the invention that noise must be accounted for and therefore zeroing the difference where noise is detected so that false values are not used in the compression system, *Official Notice*. Also a general teaching can be found in the reference (Roeder: column 1, lines 52-58), as in the claim.

Martin a method of processing video data to detect field characteristics of the data (Martin: figures 2-3), said data having a plurality of fields, comprising: calculating a first difference value as a difference between pixels of a first field and pixels of a second field (Martin: column 2, lines 24-36); calculating a second difference value between the pixels of said first field and the pixels of a third field (Martin: column 2, lines 11-23); calculating a ratio (Martin: column 3, lines 33-35); comparing said ratio with a threshold (Martin: column 3, lines 36-40); determining whether said first field is an interlaced field

or a progressive field (i.e. non-interlaced) with respect to third field based on said steps of

calculating (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claim 25.

However, Martin fails to disclose that the first difference value is generated from a first

field that is successive to said second field, that the second difference value is generated

from a third field that is successive to said first field, and that the ratio is calculated

between said first and second difference values, calculating the number of moving pixels

between said second and third fields wherein the determining step includes determining

that said first field is an interlaced field if said number is lower than a moving pixel

threshold and that said first and third fields are progressive if said number is not lower

that the moving pixel threshold, as in claim 25. Hewlett discloses a method (Hewlett:

column 6, lines 30-45) generating a first difference value from a first field that is

successive to said second field (Hewlett: column 3, lines 49-56: fields T1 and BI),

generating a second difference value from a third field that is successive to said first field

(Hewlett: column 3, lines 49-56: fields B1 and T2), and that the ratio is calculated

between said first and second difference values (Hewlett: column 3, lines 60-67) in order

to get a more accurate measurement of characteristics in a video sequence (Hewlett:

column 4, lines 8-20) for determining whether a two fields of a video sequence are

interlaced or progressive (Hewlett: column 3, lines 40-48; column 5, lines 40-50).

Accordingly, given this teaching it would have been obvious for one of ordinary skill in

the art to incorporate the Hewlett teaching into the Martin method by having Martin

generate first and second difference values as shown by Hewlett into the Martin method,

and use the generated ratio be used by the determining step of Martin since that generated

ratio would provide a more accurate measurement of characteristics in a video sequence.

However, Roeder does (Roeder: figures 1A-1D; column 4, lines 20- 68; column 5, lines

1-8; column 2, Lines 46-56). It would have been obvious to one of ordinary skill in the

art at the time of the invention to calculate the number of moving pixels between said

second and third fields wherein a determining step includes determining that said first

field is an interlaced field if said number is lower than a moving pixel threshold and that

said first and third fields are progressive if said number is not lower that the moving pixel

threshold, which would allow for more accurate compression and display. The Martin

method, now incorporating the first and second difference values as shown by Hewlett

and the Roeder moving pixel counting step, has all of the features of claim 25.

The Martin method, now incorporating the first and second difference values as

shown by Hewlett, has a majority of the features of claim 28, but does not specifically

teach detecting a moving region by calculating the number of moving pixels between said

second and third fields wherein the determining step includes determining that said first

field is an interlaced field if said number is lower than a moving pixel threshold and that

said first and third fields are progressive if said number is not lower that the moving pixel

threshold. However, Roeder does (Roeder: figures 1A-1D; column 4, lines 20- 68;

column 5, lines 1-8; column 2, Lines 46-56). It would have been obvious to one of

ordinary skill in the art at the time of the invention to calculate the number of moving

pixels between said second and third fields wherein a determining step includes

determining that said first field is an interlaced field if said number is lower than a

moving pixel threshold and that said first and third fields are progressive if said number

is not lower that the moving pixel threshold, which would allow for more accurate

compression and display. The Martin method, now incorporating the first and second

difference values as shown by Hewlett and the Roeder moving pixel counting step, has

all of the features of claim 28.

Martin a method of processing video data to detect field characteristics of the data

(Martin: figures 2-3), said data having a plurality of fields, comprising: calculating a first

difference value as a difference between pixels of a first field and pixels of a second field

(Martin: column 2, lines 24-36); calculating a second difference value between the pixels

of said first field and the pixels of a third field (Martin: column 2, lines 11-23);

calculating a ratio (Martin: column 3, lines 33-35); comparing said ratio with a threshold

(Martin: column 3, lines 36-40); determining whether said first field is an interlaced field

or a progressive field (i.e. non-interlaced) with respect to third field based on said steps of

calculating (Martin: column 3, lines 50-67; column 4, lines 1-40), as in claim 31.

However, Martin fails to disclose that the first difference value is generated from a first

field that is successive to said second field, that the second difference value is generated

from a third field that is successive to said first field, and that the ratio is calculated

between said first and second difference values, teaches verifying whether a scene change

has occurred, as in the claims. Hewlett discloses a method (Hewlett: column 6, lines 30-

45) generating a first difference value from a first field that is successive to said second

field (Hewlett: column 3, lines 49-56: fields T1 and BI), generating a second difference

value from a third field that is successive to said first field (Hewlett: column 3, lines 49-

56: fields B1 and T2), and that the ratio is calculated between said first and second

difference values (Hewlett: column 3, lines 60-67) in order to get a more accurate

measurement of characteristics in a video sequence (Hewlett: column 4, lines 8-20) for

determining whether a two fields of a video sequence are interlaced or progressive

(Hewlett: column 3, lines 40-48; column 5, lines 40-50). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art to incorporate the Hewlett teaching into the Martin method by having Martin generate first and second difference values as shown by Hewlett into the Martin method, and use the generated ratio be used by the determining step of Martin since that generated ratio would provide a more accurate measurement of characteristics in a video sequence. The Martin method, now incorporating the first and second difference values as shown by Hewlett, has a majority of the features of claim 31, but does not specifically teach detecting a moving region by calculating the number of moving pixels between said second and third fields wherein the determining step includes determining that said first field is an interlaced field if said number is lower than a moving pixel threshold and that said first and third fields are progressive if said number is not lower that the moving pixel threshold. However, Roeder does (Roeder: figures 1A-1D; column 4, lines 20- 68; column 5, lines 1-8; column 2, Lines 46-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to calculate the number of moving pixels between said second and third fields wherein a determining step includes determining that said first field is an interlaced field if said number is lower than a moving pixel threshold and that said first and third fields are progressive if said number is not lower that the moving pixel threshold, which would allow for more accurate compression and display. The Martin method, now incorporating the first and second difference values as shown by Hewlett and the Roeder moving pixel counting step, has all of the features of claim 31.

Regarding claims 32-33, the Martin method, now incorporating the first and second difference values as shown by Hewlett and the Roeder moving pixel counting

step, discloses calculating a ratio between the first and second difference value (Hewlett: column 5, line 1-10); and comparing the ratio to a threshold, wherein determining whether the first field is an interlaced field or a progressive field (Martin: column 3, lines 55-67; column 4, lines 1-20), as in the claims.

Regarding claim 34, the Martin method, now incorporating the first and second difference values as shown by Hewlett and the Roeder moving pixel counting step, has calculating pixel differences between the pixel of the first field and two pixels of the second field, selecting a smaller difference between said pixel differences, and accumulating said smaller pixel difference (Roeder: figures 1A-1D; column 4, lines 20-68; column 5, lines 1-8; column 2, Lines 46-56), as in the claim.

Regarding claims 35-36, the Martin method, now incorporating the first and second difference values as shown by Hewlett and the Roeder moving pixel counting step, has detecting a moving region by calculating the number of moving pixels between said second and third fields wherein the determining step includes determining that said first field is an interlaced field if said number is lower than a moving pixel threshold and that said first and third fields are progressive if said number is not lower that the moving pixel threshold (Roeder: figures 1A-1D; column 4, lines 20- 68; column 5, lines 1-8; column 2, Lines 46-56), as in the claim.

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mishima discloses a method of generating frame interpolation image and an apparatus therefor. Dimotrova discloses a video content detection method

and system leveraging data-compression constructs. Liu discloses a video encoder with

embedded scene change and 3:2 pulldown detections. Wells discloses a content adaptive

video processor using motion compensation. Ozgen discloses a interlaced to progressive

scan conversion based on film source detection. Law discloses a method and system for

converting interlaced formatted video progressive scan video. Yonemitsu discloses an

apparatus for coding and decoding a digital video signal derived from a motion picture

film source. Rao discloses an analyzer and methods for detecting and processing video

data types in a video data stream. Wu discloses a fade detector for digital video.

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337.

The examiner can normally be reached on Monday-Friday 8 hours.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

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have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

                                            Andy S. Rao
                                            Primary Examiner

Art Unit 2621

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May 7, 2008